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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,364	10/22/2003	Shi-Wai S. Cheng	GP-303400	4959

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EXAMINER

ALI, HYDER

ART UNIT PAPER NUMBER

3747

DATE MAILED: 07/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/691,364	<b>Applicant(s)</b> CHENG, SHI-WAI S.	
	<b>Examiner</b> HYDER ALI	<b>Art Unit</b> 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/22/03</u> . | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al (DE 3216820).

As to Claim 7, Ito et al discloses a valve shield for a combustion engine having an intake port, a valve guide 10 having an end proximate the intake port, and a valve stem 14 movable relative to the valve guide and having a defined displacement with respect thereto, the valve shield 12 comprising: a first end proximate the end of the valve guide; a second end at a defined distance from the first ends an outer surface disposed between the first and second ends and facing the an inner surface disposed between the first and second ends and facing the intake port; and valve stem; wherein the defined distance is equal to or greater than the defined displacement.

As to Claim 8, Ito et al discloses the valve stem includes an outer surface disposed at the intake port, and further wherein: the outer surface of the valve shield is disposed at a distance from the outer surface of the valve stem such that the outer surface of the valve shield has a lower operating temperature than the outer surface of the valve stem.

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As to Claim 9, Ito et al discloses the outer surface of the valve shield at least partially surrounds the valve stem such that the valve stem is shielded from direct exposure to a fuel containing high boiling fraction (inherent in Ito et al patent).

As to Claim 10, Ito et al discloses wherein the inner and outer surfaces of the valve shield define a thickness  $t$ ; the inner and outer surfaces of the valve guide define a thickness  $T$ ; and thickness  $t$  is equal to or greater than about  $1/8$  of thickness  $T$  and equal to or less than about  $1/4$  of thickness  $T$ .

As to Claim 11, Ito et al discloses a method for lessening the accumulation of high boiling fraction (inherent in Ito et al patent) between a valve stem 14 and a valve guide 10 of a combustion engine, comprising: operating the combustion engine by introducing an air-fuel mixture into an intake port for combustion in a combustion chamber and igniting the mixture therein; and shielding a portion of the valve stem that extends beyond the valve guide from direct exposure to the air-fuel mixture; wherein the shielded portion of the valve stem is exposed to less air-fuel mixture than if unshielded, thereby lessening the accumulation of high boiling fraction on the valve stem and between the valve stem and valve guide.

As to Claim 12, Ito et al discloses the valve stem cyclically extends and retracts beyond the end of the valve guide 10 a defined displacement, the defined displacement and diameter of the valve stem 14 defining a surface area on the valve stem 14, and wherein the shielding further comprises: shielding at least a portion of the defined surface area for a length equal to or greater than the defined displacement.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (DE 3216820) in view of Matthews (US 5,592,913). Ito et al applies as above but is silent regarding first clearance dimension. Matthews teach first clearance dimension 23. It would have been obvious to one of ordinary skill in the art to modify Ito et al by employing first clearance dimension in order to maintained first clearance dimension between the valve guide and valve stem during the operation of the engine.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The reference by Adegawa discloses lubricating oil invaded into a gap between the valve stem and the valve guide goes down through the grooves, gets out of the valve guide and adhere onto the valve head in the intake port.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYDER ALI whose telephone number is (703) 308-3949. The examiner can normally be reached on M-F (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HENRY YUEN can be reached on (703) 308-1946. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Hyder Ali*

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Art Unit 3747